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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.           | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------------|------------------|
| 10/689,675  | 10/22/2003  | Alfred Grill         | YOR920030300US1<br>(20140-00) | 4901             |
| 30678 7590 04/19/2007<br>CONNOLLY BOVE LODGE & HUTZ LLP<br>P.O. BOX 2207<br>WILMINGTON, DE 19899-2207 |             |                      | EXAMINER<br>JOHNSON, EDWARD M |                  |
|   |             |                      | ART UNIT                      | PAPER NUMBER     |
|   |             |                      | 1754                          |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  |             | MAIL DATE            | DELIVERY MODE                 |                  |
| 3 MONTHS  |             | 04/19/2007           | PAPER                         |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/689,675 | <b>Applicant(s)</b><br>GRILL ET AL. |  |
|                              | <b>Examiner</b><br>Edward M. Johnson | <b>Art Unit</b><br>1754             |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lee et al. US 6,350,488.

Regarding claim 1, Lee '488 discloses a method for making carbon nanotubes having a diameter of a few nanometers to a few hundred nanometers by chemical vapor deposition (see abstract and column 5, lines 54-56) comprising introducing a catalyst substrate into a CVD reactor by etching, which would inherently correspond to lithographically patterning (column 2, lines 15-18), raising the temperature of the reactor to 700-1000 degrees C (column 2, lines 36-40), flowing a carbon source gas to the CVD reactor in forming the carbon nanotubes (column 2, lines 44-48), wherein the carbon source gas is acetylene and is supplied at a flow rate of 40 sccm for 10 minutes to grow nanotubes having a diameter of about 80 nm (Example 1), which would

Art Unit: 1754

inherently correspond to controlling the residence time to control diameter.

3. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicant to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. In re Fitzgerald et al. 205 USPQ 594.

Regarding claims 2-4, 9-10, and 13-14, Lee '488 discloses the carbon source gas is acetylene and is supplied at a flow rate of 40 sccm for 10 minutes to grow nanotubes having a diameter of about 80 nm (Example 1) and controlling the pressure inside the reactor (see column 4, lines 28-33 and Examples 1 and 7-8).

Regarding claim 5, Lee '488 discloses raising the temperature of the reactor to 700-1000 degrees C (column 2, lines 36-40).

Regarding claims 6-8 and 15, Lee '488 discloses forming nanosized metal catalytic particles (abstract) Ni, Co, Fe, or an alloy thereof (see Embodiment 1).

Regarding claims 11-12, Lee '488 discloses argon (see column 6, lines 23-29).

***Response to Arguments***

5. Applicant's arguments filed 1/29/07 have been fully considered but they are not persuasive.

It is argued that the rejections of claims 1-20... are deemed not tenable. This is not persuasive because Lee discloses controlling the flow rate of the carbon source gas, which would inherently control the residence time thereof, since at a faster flow rate, the residence time would be shorter and at a slower flow rate, the residence time would be longer. Applicant appears to admit that Lee further discloses this flow rate control to produce a particular diameter, which is even more specific than the claimed process, which is not limited to any diameter in particular.

It is argued that Example 1 of Lee does not suggest as urged in the office action. This is not persuasive for the reasons above.

It is argued that in fact, if anything, Lee teaches away... an area of the substrate. This is not persuasive for the reasons above and also because Applicant does not claim a process that excludes "etching a catalyst layer" or wherein particles are not "evenly distributed," as Applicant appears to suggest. It is noted that the features upon which applicant relies (i.e., a process that excludes "etching a catalyst layer" or wherein

Art Unit: 1754

particles are not "evenly distributed") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is argued that in addition to the extent inherency... such is misplaced. This is not persuasive because controlling the flow rate would necessarily result in controlling residence time, since at a faster flow rate, the residence time would be shorter and at a slower flow rate, the residence time would be longer.

### **Conclusion**

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1754

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

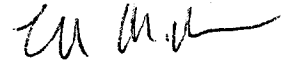
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199

Application/Control Number: 10/689,675

Page 7

Art Unit: 1754

(IN USA OR CANADA) or 571-272-1000.



Edward M. Johnson  
Primary Examiner  
Art Unit 1754

EMJ